

Index of E.209G at NARA Southwest Region
(Apollo Program MIT technical documents from JSC)

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Last updated 12/19/2003.

Notes

1. The "Designations" listed below are M.I.T./Instrumentation Laboratory document numbers, where available.
2. The "Page Counts" listed below are sometimes exact, but at other times are only rough estimations because the documents themselves didn't always include the page counts in an easily usable form. I thought it was useful to guesstimate the page counts so that anyone who wanted copies of the documents could more easily estimate the time/expense involved.
3. My (Ron Burkey's) comments are marked with the notation "RSB".

Box 1

<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
-	Declassification of E.209G	-	April 1970	1
-	Documentation Status Report No. 2	-	July 1962	60
-	Documentation Status Report No. 4	-	February 1963	50
-	Documentation Status Report No. 5	-	March 1963	50
-	Documentation Status Report No. 6	-	April 1963	50
-	Documentation Status Report No. 8	-	September 1963	100
-	Apollo G&N Documentation Status Report No. 9	-	October 1963	250
-	Apollo G&N Documentation Status Report No. 11	-	December 1963	200
-	Apollo G&N Documentation Status Report No. 12	-	January 1964	250

Box 1A

<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
-	Documentation Status Report No. 13	-	February 1964	150
-	Documentation Status Report No. 14	-	March 1964	150
-	Documentation Status Report No. 15	-	April 1964	100
-	Documentation Status Report No. 16	-	May 1964	100
-	Documentation Status Report No. 17	-	June 1964	100
-	Documentation Status Report No. 18	-	July 1964	100
-	Documentation Status Report No. 19	-	August 1964	100

Box 1B

<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
-	Documentation Status Report No. 20	-	September 1964	100
-	Documentation Status Report No. 21	-	October 1964	100
-	Documentation Status Report No. 22	-	November 1964	100
-	Documentation Status Report No. 23	-	December 1964	100
-	Documentation Status Report No. 24	-	January 1965	100
-	Documentation Status Report No. 25	-	February 1965	100
-	Documentation Status Report No. 27	-	April 1965	100
-	Documentation Status Report No. 28	-	May 1965	100
-	Documentation Status Report No. 30	-	July 1965	100

Box 2

<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
-	Proposed Apollo Guidance and Control Statement of Work	-	December 1964	150
E-965	A Sunfinder for an Interplanetary Vehicle, rev. A	Harold H. Seward	December 1960	27
E-1054	Analysis of the PNP-NPN Latch Circuit	Joseph Rocchio	September 1961	30
E-1067	Monthly Technical Progress Report Project Apollo Guidance and Navigation Program	-	August-September 1961	50
E-1068	Monthly Technical Progress Report Project Apollo Guidance and Navigation Program	-	September-October 1961	70
E-1074	Erasable Ferrite Memory Mod 3C Computer	D. Shansky	October 1961	15
E-1077	Preliminary Mod 3C Programmers Manual	R. Alonso, J. H. Laning, Jr., and H. Blair-Smith	November 1961	81
E-1078	Development Plan, plus corrections	-	November 1961	151
E-1087	Documentation Plan	-	February 1962	40
E-1087	Documentation Handbook (includes the Documentation Plan)	-	May 1963	150

Box 3

<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
-	"Special Course of Instruction" for Apollo Guidance and Navigation	Jerome E. Levy	January 1964	150
E-1087	Apollo Guidance & Navigation Documentation Handbook, rev. A	-	March 1964	200

E-1087	Apollo Guidance & Navigation Documentation Handbook, rev. C	-	July 1965	200
E-1087	Apollo Guidance & Navigation Documentation Handbook and Plan, rev. D	-	February 1966	100
E-1087	Apollo Guidance & Navigation Documentation Handbook and Plan, rev. E	-	October 1966	100
E-1097	Work Statement for Industrial Support, plus Addendum	-	January 1962 (Addendum February 1962)	200
E-1099	Monthly Technical Progress Report Project Apollo Guidance and Navigation Program	-	October-November 1961	55

Box 3A

<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
E-1100	Work Statement for the Pulsed Integrating Pendulum (PIP) MODEL D	M. Sapuppo	December 1961	10
E-1101	Work Statement for the APOLLOC 25 IRIG	E. J. Hall	December 1961	10
E-1104	Preliminary Assembly and Test Manual 16 PIP MOD D	-	January 1962	10
E-1105	Computer Displays	E. C. Hall	January 1962	10
E-1113	System Identification Data List	-	August 1962	25
E-1116	Quarterly Technical Progress Report Project Apollo Guidance and Navigation Program	-	December 1961	10
E-1117	Monthly Technical Progress Report Project Apollo Guidance and Navigation Program	-	December 1961 through January 1962	95
E-1118	Investigation of Midcourse Maneuver Fuel Requirements for Apollo Spacecraft	Roger Scholten and Peter Philliou	March 1962	70

E-1123	System and Component Slide Reprints	D. Hoag	February 1962	8
E-1124	Preliminary Study of Aborts from Circumlunar Trajectories	James S. Miller and John J. Deyst, Jr.	March 1962	35
E-1125	Preliminary Resolver Angle Measurement	Ramon L. Alonso	February 1962	25
E-1130	Maintenance Plan	-	March 1962	8
E-1134	Photometric Units in the MKS System	Arthur C. Hardy	March 1962	10
E-1139	Monthly Technical Progress Report Project Apollo Guidance and Navigation Program	-	January-February 1962	10
E-1140	Quarterly Technical Progress Report Project Apollo Guidance and Navigation Program	-	March 1962	115

Box 4

<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
E-1142	Weight and Balance Report	-	March 1962	5
E-1142 (continued)	Revs. A, 2-14, and 18-35. At rev. 11, the title changes to "System Status Report"	-	Various, through August 1965	5-50 each

Box 5

<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
E-1142 (continued)	Revs. 36-55	-	September 1965 through February 1968	50 each

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
E-1142 (continued)	Revs. 56-61	-	April 1968 through May 1969	50 each
E-1158	Erasable Store Mod 3C	David Shansky	July 1962	34
E-1161	Technical Directive Procedures for Apollo G and N System Participating Contractors	Isadore Halzel	May 1962	15
E-1167	Drawing Standards	-	December 1962	300
E-1167	MIT Apollo Drawing Standards, Rev. 1	-	June 1964	130
E-1168	Slide Reprints of Presentation at MSA at Houston to Participating Contractors	-	May 1962	90

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
E-1172	The Visibility of Stars (Calculated from the Tiffany Data)	Arthur C. Hardy	June 1962	15
E-1173	The Heat Transfer Properties of Structural Elements for Space Instruments	Richard M. Jansson	June 1962	20
E-1174	Slide Reprints Quarterly Management Review Meeting NASA, in Houston	Perry K. Bryant	June 1962	37
E-1177	Monthly Technical Progress Report Project Apollo Guidance and Navigation Program	-	April-May 1962	168
E-1179	Rope Core Tester	Robert G. Scott	July 1962	31

E-1182	Launch Vehicle Guidance Study	-	May 1962	10
E-1186	Technical Data Release Procedures	-	August 1962	30
E-1186 (continued)	Revs. 1-6	-	December 1962 through March 1970	30-40 each
E-1195	Earth Orbital Rendezvous	Norman E. Sears	May 1962	54
E-1196	Analysis of Two Lunar Landing Techniques Providing Direct Landing Site Visibility Prior to Touchdown	Malcolm W. Johnston	July 1962	25
E-1199	Quarterly Technical Progress Report Project Apollo Guidance and Navigation Program	-	June 1962	28
E-1203	Calibration Techniques for Precision Rotary Components	G. A. Davidson and H. H. Seward	August 1962	41
E-1206	The Blue-White Boundary Horizon Sensor	H. H. Seward	September 1962	15

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
E-1212	IMU Error Data for Apollo Trajectories	Frederic D. Grant, Jr.	September 1962	115
E-1215	Thermal Models for High Density Computer Circuit Structures	T. C. Taylor	September 1962	40
E-1233	Techniques of Circuit Fabrication with State-of-the-Art, Weldable Multilayer Boards	Theodore C. Taylor	October 1962	14
E-1236	Monthly Technical Progress Report Project Apollo Guidance and Navigation Program	-	June-July 1962	83
E-1237	Monthly Technical Progress Report Project Apollo Guidance and Navigation Program	-	July-August 1962	128

E-1238	Quarterly Technical Progress Report Project Apollo Guidance and Navigation Program	-	September 1962	49
E-1253	Slide Reprints of Manned Spacecraft Center Guidance System Review at Houston	C. Stark Draper	November 1962	71
E-1256	Apollo Midcourse Guidance	John W. Hursh	November 1962	28
E-1258	Slide Reprints (Shown to Astronauts at MIT in Cambridge)	-	December 1962	40
E-1285	Some Luminance Values for the Sun, Earth, and Moon	Arthur C. Hardy	January 1963	10
E-1287	Backup Thrust Vector Control	John M. Dahlen and James H. Long	February 1963	19
E-1288	Alignment Errors of the IMU Stable Member	Frederic D. Grant	February 1963	12
E-1293	Field Operations Program Plan. (Duplicated from Box 9.)	Randall T. Boyd, Jr., ed.	February 1964	240

Box 9

<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
E-1293	Field Operations Program Plan. (Duplicated from Box 8.)	Randall T. Boyd, Jr., ed.	February 1964	240
E-1293	Field Operations Program, Rev. 2	L. Wilk	May 1963	200
E-1293	Field Operations Program, Rev. 1 ^u	Randall T. Boyd, Jr.	April 1965	180
E-1297	Inertial Subsystem (ISS) Calibration Tests	James H. Flanders	June 1963	130
E-1302	Monthly Technical Progress Report Project Apollo Guidance and Navigation Program	-	September-October 1962	31

E-1303	Monthly Technical Progress Report Project Apollo Guidance and Navigation Program	-	October-November 1962	36
E-1304	Quarterly Technical Progress Report Project Apollo Guidance and Navigation Program	-	December 1962	4
E-1305	Monthly Technical Progress Report Project Apollo Guidance and Navigation Program	-	December 1962 through January 1963	49
E-1306	Monthly Technical Progress Report Project Apollo Guidance and Navigation Program	-	January-February 1963	226
E-1307	Quarterly Technical Progress Report Project Apollo Guidance and Navigation Program	-	March 1963	92

Box 10

<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
E-1308	Monthly Technical Progress Report Project Apollo Guidance and Navigation Program	-	April 1963	124
E-1313	Thermal Grounding Analysis for Circuit Structures	Theodore C. Taylor	April 1963	29
E-1321	Gyrocompassing with Integrating Accelerometers	Raymond B. Harlan	May 1963	54
E-1322	Apollo Guidance and Navigation Failure Reporting and Corrective Action Plan	George W. Mayo, ed.	April 1963	75
E-1322	Apollo Guidance and Navigation Failure Reporting and Corrective Action Plan, Rev. 1	George W. Mayo, ed.	March 1965	70
E-1330	Apollo 16 PIPA Test Console Job Description Cards for Operation and Maintenance	-	August 1963	80
E-1333	Cloud Cover Data for Landmark Studies	Chung L. Pu	March 1963	40
E-1342	Chapter 5, Computer Subsystem (Prepared by Raytheon)	-	September	

			1963	130
E-1343	Ternary Pulse Torquing	George Oberbeck	May 1963	12
E-1344	Consideration of Apollo IMU Gimbal Lock	David Hoag	April 1963	20
E-1350	Statistical Decision Theory for Logistics Planning	Warren G. Briggs	May 1963	41
E-1353	The Horizon Photometer and Other Earth Parking Orbit Guidance and Navigation Measurements	Edward Copps, D. Alexander Koso, Kenneth Nordtvedt, and Milton Trageser	May 1963	40

Box 11

<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
E-1363	Status of Apollo Flight Safety System Design and Development	Thomas Heinsheimer	June 1963	30
E-1374	Propagation of Altitude and Altitude Rate Errors During Suborbital Flight	Janusz Sciengienny	June 1963	20
E-1385	Visibility Data and the Use of Optical Aids	Arthur C. Hardy	July 1963	25
E-1386	Report on Clear Resins	Samuel C. Smith	August 1963	12
E-1388	Summary of Error Propagation in an Inertial System	Janusz Sciengienny	August 1963	20
E-1389	Quarterly Technical Progress Report Project Apollo Guidance and Navigation Program	-	June 1963	52
E-1413	Some Reversible and More Permanent Effects of Moisture on the Electrical Characteristics of Germanium Transistors Following Stress	Jayne Partridge and Arnold J. Borofsky	September 1963	50
E-1420	On the Extrapolation of Accelerated Stress Conditions to Normal Stress Conditions of Germanium Transistors	Jayne Partridge	September 1963	35
E-1425	A Comparison of the Readout Resolutions of the Proportional Elastance	Charles C. Perez	September	

	vs. Constant Elastance Torque-to-Balance Systems		1963	20
E-1429	Lunar Orbit Determination by Star Occultations and MSFN Tracking	David S. Baker, Norman E. Sears, John B. Suomala, and Robert L. White	September 1963	50
E-1432 (2 copies)	GSE Familiarization Manual	-	January 1964	150
E-1432	GSE Familiarization Manual, Rev. August 1964	-	August 1964	250

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
E-1482	Inflight Alignment Errors of the IMU Stable Member	Frederic D. Grant	December 1963	34
E-1492	On the Perception of Flashes of Light at the Limit of their Perceptibility	George A. Davidson and Arthur C. Hardy	January 1964	35
E-1494	Monthly Technical Progress Report Project Apollo Guidance and Navigation Program	-	October 1963	50
E-1495	Monthly Technical Progress Report Project Apollo Guidance and Navigation Program	-	November 1963	45
E-1496	Quarterly Technical Progress Report Project Apollo Guidance and Navigation Program	-	December 1963	45
E-1524	Evaluation of Urethane Foam for Potting	Samuel C. Smith	February 1964	30
E-1534	Monthly Technical Progress Report Project Apollo Guidance and Navigation Program	-	January 1964	50
E-1539	Thermal Properties of Some Structural Members for Space-Borne Computer Assemblies	Theodore C. Taylor and Thomas A. Zulon	March 1964	40

E-1540	A Preliminary Study of a Back-Up Manual Navigation Scheme	Kenneth Nordtvedt	August 1964	25
E-1544	Monthly Technical Progress Report Project Apollo Guidance and Navigation Program	-	February 1964	50
E-1547	Optical Equipment Handling Guidelines	P. Bowditch, A. Koso, and R. Mudgett	March 1964	20
E-1548	Brazing of Beryllium, Progress Report on DSR Project 9909	MIT Department of Metallurgy	March 1964	20
E-1551, Volume One	Functions and Mechanization of the Apollo Guidance and Navigation System: Inertial Subsystem	R. Larson (ACSP) and A. Klumpp	August 1964	80
E-1557	Average Power Profiles for Apollo Guidance and Navigation in the Command Module and Lunar Excursion Module	William Nadler	April 1964	15
E-1560	A Manual LEM Back-Up Guidance System	Malcolm W. Johnston	April 1964	30
E-1573	Quarterly Technical Progress Report Project Apollo Guidance and Navigation Program	-	March 1964	318
E-1588	Apollo G&N Site Activation Plan	Randall T. Boyd, Jr., and Gerald Hinds	June 1964	20
E-1590	Monthly Technical Progress Report Project Apollo Guidance and Navigation Program	-	April 1964	90

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
E-1609	Monthly Technical Progress Report Project Apollo Guidance and Navigation Program	-	May 1964	62
E-1634	The Profile of an Exponential Atmosphere Viewed from Outer Space and Consequences for Space Navigation	Dr. Milo Wolff	September 1964	35

E-1639	Monthly Progress Report No. 1 on Contract NAS9-3079 Covering July 1964	-	August 1964	5
E-1650	Monthly Progress Report No. 2 on Contract NAS9-3079 Covering August 1964	-	September 1964	5
E-1663	A Manual Abort Guidance Procedure Based on Range and Altitude Measurements	Allan R. Klumpp	October 1964	45
E-1666	Quarterly Progress Report Contract NAS9-3079 Covering June 30, 1964 to September 30, 1964	-	September 1964	5
E-1670	Quarterly Technical Progress Report Project Apollo Guidance and Navigation Program	-	June 1964	50
E-1679	Progress Report on Attainable Reliability of Integrated Circuits for Systems Application	Jayne Partridge, L. David Hanley, and Eldon C. Hall	November 1964	40
E-1684	Monthly Progress Report No. 3 on Contract NAS9-3079 Covering October 1964	-	November 1964	5
E-1687	An Optical Earth Horizon Profile Based Upon Tabulated Solutions of Chandrasekhar's Equations	Dr. Milo Wolff	October 1964	40
E-1688	Sampling Reliability Test Plans with Relatively Small Lot Sizes	Harry H. Cho	December 1964	50
E-1689	A Proposed Circuit Structure for Computer Logic Based on Semiconductor Flat Packs Interconnected by Multilayer Circuit Boards	Theodore C. Taylor	December 1964	30
E-1713	Combustion of Polyolefin Insulation and Toxicity of Teflon Under Electrical Overloads	A. O. Mirarchi	December 1964	35
E-1717	Monthly Progress Report No. 4 on Contract NAS9-3079 Covering November 1964	-	December 1964	5
E-1718	Monthly Technical Progress Report Project Apollo Guidance and Navigation Program	-	July 1964	75
E-1727	Quarterly Progress Report No. 2 on Contract NAS9-3079 Covering October 1, 1964 through December 31, 1964	-	December 1964	5

E-1734	Brazing of Beryllium, Final Report on DSR Project 9909	Prof. Clyde M. Adams, Jr., and Stanley Weiss	February 1965	45
E-1740	Monthly Technical Progress Report Project Apollo Guidance and Navigation Program	-	August 1964	60
E-1749	Quarterly Technical Progress Report Project Apollo Guidance and Navigation Program	-	September 1964	50
E-1750	Computer Programs for Optical System Analysis and Design	Donald C. Dilworth	February 1965	80
E-1758	Organization of Computation and Control in the Apollo Guidance Computer	T. J. Lawton and C. A. Muntz	April 1965	25
E-1759	Gyro Temperature Dependent Drift	Erich K. Bender	August 1965	35
E-1760	Performance Monitoring of the PGNS for Unpowered Lunar Orbit Flight Phases	B. A. Kriegsman and D. S. Millard	December 1965	125
E-1761	Quarterly Program and Technical Progress Report Project Apollo Guidance and Navigation Program	-	December 1964	70

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E-1764	Monthly Progress Report No. 6 on Contract NAS9-3079 Covering February 1965	-	March 1965	5
E-1769	Typical Missile and Satellite Radar Tracking Systems	Walter Tanner	April 1965	40
E-1779	Quarterly Progress Report No. 3 on Contract NAS9-3079 Covering Jan. 1, 1965 to March 31, 1965	-	March 1965	5
E-1786	Verification Plan for AGC/LGC Programs	T. J. Lawton and C. A. Muntz	May 1965	15

E-1789	Quarterly Technical Progress Report Project Apollo Guidance and Navigation Program	-	March 1965	90
E-1792	16 PIP MOD D Centrifuge Tests	George J. Reichenbacher	August 1965	35
E-1800	A Sequence of Computer Programs Useful in the Analysis of Feedback Control Systems	Donald C. Fraser	May 1965	125
E-1801	Apollo GN&C Equipment Contingency Plan (Apollo Ground Checkout)	J. D. Fleming, Jr., and R. T. Boyd, Jr.	February 1966	45
E-1802	Characteristics of Soft Metals for Electrical Connections	Theodore C. Taylor	June 1965	30
E-1803	System Analysis of Lunar Landing Radar	J. Sciegienny	June 1965	70
E-1808	Rope Memory Module Assembly Processing Procedures	A. LaPointe	June 1965	30
E-1809	Coupled Two-Degree-of-Freedom Response of Resiliently Supported Rigid Body to Random Excitation	G. Dudley Shepard	December 1965	35
E-1810	Analysis of Landing Radar Geometry During Redesignation of Lunar Landing Site	J. Sciegienny	July 1965	70
E-1815	Quarterly Technical Progress Report Project Apollo Guidance and Navigation Program	-	June 1965	70
E-1819	A Lunar Photometric Function: Curves for Calculating the Differential Luminance of the Lunar Surface	J. Gallagher and J. Hallock	July 1965	65
E-1823	The Design of Series-Loaded Thermal Conductors for Minimum Weight	Theodore C. Taylor	July 1965	20
E-1828	G&N System Data for Mission AS-202 Development Engineering Inspection	Apollo Staff	August 1965	84
E-1832	Attitude Maneuver Optimization to Conserve Reaction Control Propellants	R. Crisp and D. Keene	August 1965	35
E-1836	Studies of Spacecraft Attitude Change Modes and Resulting Attitude Fuel Consumptions	Kenneth Nordtvedt	August 1965	35

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
E-1838	The Application of Failure Analysis in Procuring and Screening of Integrated Circuits	L. D. Hanley, J. Partridge, and E. C. Hall	October 1965	50
E-1855	Pulsed Light Source Simulation of Transient Nuclear Effects in Integrated Circuits	Harold E. Maurer	October 1965	40
E-1859	Design Principles for a Multilayer Circuit Board Connector Using Soft Metal Contacts	Theodore C. Taylor	October 1965	20
E-1864	Presimulation Report, Apollo Mission 202, Dynamic Simulation Block I	Madeline Sullivan	September 1965	50
E-1872	Quarterly Technical Progress Report Project Apollo Guidance and Navigation Program	-	September 1965	120
E-1877	Show-Banksum and Final Block I AGC Selfcheck	Edwin D. Smally	November 1965	55
E-1880	A Case History of the AGC Integrated Logic Circuits	Eldon C. Hall	December 1965	35
E-1899	Apollo Operations Handbook Guidance & Navigation System Command & Service Module Mission AS-204A, Spacecraft 012	-	June 1966	400
E-1901	Visibility of the LEM with Various Background Luminances	Kenyon L. Zapf	January 1966	20
E-1903	PGNS Rendezvous Radar Functional and Performance Specification	N. E. Sears and L. B. Johnson	March 1965	58
E-1904	PGNS Landing Radar Functional and Performance Specifications	N. E. Sears and L. B. Johnson	February 1965	46
E-1905	Keyboard and Display Program Operation	Alan I. Green	January 1966	85
E-1906	Fourier Analysis by the Method of Selected Ordinates	James N. Hallock	January 1966	95

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
E-1921	Quarterly Technical Progress Report Project Apollo Guidance and Navigation Program	-	December 1965	100
E-1922	Mission AS-202, AGC Software Verification. Summary of Results of Digital Simulations	Albrecht L. Kosmala	February 1966	200
E-1923	Apollo Mission 202, Dynamic Simulation Block I	Madeline M. Sullivan and James F. Cutter	January 1966	145
E-1926	A Design Procedure for Radiation Hardening Certain NOR Gate Logic Circuits	Harold E. Maurer	March 1966	20
E-1937	Velocity Errors in Lunar Landing Radar Caused by Digital Processing	Janusz Sciegienny	March 1966	70
E-1942	Command Angle Torquing of Gyros in the Apollo Guidance and Navigation System	Maurice Lanman and Julius Feldman	April 1966	30
E-1944	The Impact of the Flight Specifications on Semiconductor Failure Rates	Jayne Partridge and L. David Hanley, Jr.	June 1967	30
E-1956	An Automated Documentation Technique for Integrating Apollo Crew Procedures and Computer Logic	J. C. Dunbar, R. A. Larson, and P. T. Augart	May 1966	50
E-1958	Quarterly Technical Progress Report Project Apollo Guidance and Navigation Program	-	March 1966	140
E-1964	Apollo Command and Service Module Reaction Control by the Digital Autopilot	R. Crisp and D. Keene	May 1966	40
E-1970	Case History of the Apollo Guidance Computer	Eldon C. Hall	June 1966	40
E-1971	Reliability Assessments of Microcircuits and Microelectronic Systems	Eldon C. Hall	June 1966	75

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
E-1973	Statistical Estimation in Inertial Systems	Larry D. Brock and George T. Schmidt	June 1966	20
E-1974	Apollo 16 PIPA Test Console Verification Tests	David McCabe	June 1966	16
E-1975	Simulated LEM Inflight IMU Alignment Sightings	James Wolf	June 1966	50
E-1976	Radar Interface Evaluation Phase I Final Test Report	Walter E. Tanner and William Saltzberg	May 1966	70
E-1978	Block II/LEM Optics Design Evaluation Interim Report	-	June 1966	85
E-1981	LEM-PGNCS Guidance Equations for a Nominal Lunar Landing Mission	N. E. Sears and P. F. Hoffman	May 1966	150
E-1982	LEM PGNCs and Landing Radar Operations During the Powered Lunar Landings Maneuver	B. Kriegsman and N. Sears	August 1966	235
E-1983	Lunar Orbit Navigation Performance with Various Random and Systematic Errors	D. S. Baker, N. E. Sears, and R. L. White	July 1966	90
E-1989	Keyboard and Display Program Operation	Alan I. Green and Robert I. Filene	July 1966	80
E-2014	Temperature Control of the Apollo Block II Inertial Measurement Unit	A. H. Arpiarian	August 1966	30
E-2026	Users' Guide to the AGC Monitor (Core Rope Simulator)	James D. Wood	September 1966	65
E-2031	Entry Flight Data for Mission AS-202	R. Morth	October 1966	80
E-2034	LM Alignment Optical Telescope Mechanical Integrity Design Evaluation Final Report	E. K. Gardner	September 1966	32

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
E-2051	Design Evaluation Thermal-Vac Tests Final Report	W. A. Vachon	November 1966	80
E-2052, vol. 1 of 2	AGC4 Basic Training Manual	Bernard I. Savage and Alice Drake	January 1967	105
E-2055	Data Acquisition and Reduction MIT X-15 Horizon Definition Experiment Phase II	John Lawson	December 1966	95
E-2065, plus Addendum 1	Block II AGC Self-Check and Show-Banksum	Edwin D. Smally	December 1966	66
E-2066	Hybrid Simulation of the Apollo Guidance Navigation and Control System	Philip G. Felleman	December 1966	5
E-2079	Pre-Simulation Report: LM Dynamics Simulation	J. D. Goetzinger	September 1966	70
E-2081	Man-Machine Simulations for the Apollo Navigation, Guidance, and Control System	J. L. Nevins, E. A. Woodin, and R. W. Metzinger	January 1967	20
E-2095	Evaluation Report on Multilayer Circuit Board Connectors Using the Soft Metal Indium for Electrical Contacts	Thomas A. Zulon	March 1967	35
E-2099	Final Report on Erasable Memory Investigations	D. Shansky	March 1967	35
E-2106	Pre-Simulation Report Single Axis Block II CSM/TVC	J. O'Connor	April 1967	40
E-2108	Rate Table Control Console Instruction Manual	Stanley Drozd and John Fish	May 1967	15
E-2129	Keyboard and Display Program and Operation	Alan I. Green and Robert J. Filene	June 1967	80
E-2141	Apollo Guidance, Navigation, and Control System Gyro Reliability	John E. Miller and Julius Feldman	June 1967	45

E-2150	Guidance, Navigation, and Control Block II Command and Service Module Functional Description and Operation Using Flight Program Sundisk, Rev. I	-	July 1968	395
E-2150 (continued)	Rev. II	-	September 1968	100

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
E-2159	Computer-Controlled Steering of the Apollo Spacecraft	Frederick H. Martin and Richard H. Battin	August 1967	15
E-2160	Verification Results Summary for LGC Sunburst (LM-1 Mission)	Jay A. Sampson (AC Electronics)	August 1967	105
E-2164, Vol. 1, preliminary	Guidance, Navigation, and Control Lunar Module Functional Description and Operation Using Flight Program Sundance	-	July 1968	300
E-2164, Vol. 2	Guidance, Navigation, and Control Lunar Module Functional Description and Operation Using Flight Program Sundance	-	July 1968	500
E-2172	Cloud Obscuration of Apollo Landmarks Derived from Meteorological Satellite Observations	J. Barnes, D. Beren, and A. Glaser (Allied Research Associates, Inc.)	September 1967	140
E-2176	CSM Earth Orbital Rendezvous Simulations	E. Muller, P. Kachmar, and N. Sears	August 1967	85

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>

E-2185	Landing Radar/LGC Interface Experiments. Part II—Flight Test Data Package	W. E. Tanner, ed.	September 1967	170
E-2194	Hybrid Simulation of CSM Dynamics for AS-205	Joseph T. O'Connor	October 1967	125
E-2218	Lead Failure Study for the Motorola 1-mil Wedge-Bonded 1006323 Transistor	William Day and Jayne Partridge	December 1967	15
E-2246	Computer-Aided Inertial Platform Realignment in Manned Space Flight	James A. Hand	May 1968	15
E-2252	Inertial Components, Reliability and Population Statistics	J. Feldman and R. Cooper	March 1968	45
E-2254	Auxiliary Memory System Final Report on Phase I	D. J. Bowler	April 1968	60
E-2259, Vol. I	Guidance Navigation and Control Command Module Functional Description and Operation Using Flight Program Colossus, Revs. 2, 3, 4, 5, and 6.	-	December 1968 through June 1969	50-100 each

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
E-2259, vol. II	Guidance, Navigation, and Control Command Module Functional Description and Operation Using Flight Program Colossus	-	June 1968	940
E-2259 (continued)	Revised for Colossus 1A (Rev. 249)	-	January 1969	940

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
E-2260, vol. 1	Guidance, Navigation, and Control Lunar Module Functional Description and Operation	-	January	

	Using Flight Program Luminary		1969	545
E-2260, vol 1 (continued)	Rev. I changes	-	March 1969	234
E-2260, vol 1 (continued)	Rev. II changes	-	April 1969	538
E-2260, vol 1 (continued)	Rev. III changes	-	June 1969	100
E-2260, vol 1 (continued)	Rev. IV changes	-	June 1969	10

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E-2260, vol. 2	Guidance, Navigation, and Control Lunar Module Functional Description and Operation Using Flight Program Luminary	-	May 1968	500
E-2260, vol. 2 (continued)	Rev. V (for Luminary rev. 116)	-	October 1969	500
E-2262	Studies of On-Board Lunar Orbital Navigation with Unknown and Known Landmarks and Some Observations on Non-Linear Effects	David S. Baker	August 1968	60
E-2270	LM-Alignment Optical Telescope Thermal- Humidity Integrity Evaluation Report	Arthur Grossman	June 1968	20
E-2274	Inertial Components Reliability and Population Statistics Report II	J. Feldman and R. Cooper	May 1968	60
E-2279	Prealignment of the 16 PIP MOD D	George J. Bukow	February 1968	30
E-2299	Reliability and Quality Assurance Program Plan for	-	June 1968	

	Procurement of Apollo IRIG			90
E-2299	Reliability and Quality Assurance Program Plan for Procurement of Apollo IRIG, Rev. 1 (plus Addendum)	-	December 1968 (Addendum May 1969)	90

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
E-2305	Man/Machine Allocation in the Apollo Navigation, Guidance, and Control System	J. L. Nevins, I. S. Johnson, and T. B. Sheridan	July 1968	40
E-2307	Recovery from Transient Failures of the Apollo Guidance Computer	Edward M. Copps, Jr.	August 1968	10
E-2333	Inertial Components Reliability and Population Statistics Report III	Martin Landey	December 1968	35
E-2334	The PIPA (Pulsed Integrating Pendulous Accelerometer)	G. Bukow	September 1968	45
E-2345	Software Configuration Management Plan	-	October 1968	70
E-2346	Abrasive Cutting of Thick-Film Conductors for Hybrid Circuits	J. B. Nugent and J. S. Palermo	October 1968	15
E-2353	Digital Autopilot Verification Results: Program Colossus 1 (Rev. 237)	-	November 1968	130
E-2364	Inertial Components Reliability and Population Statistics Report IV	J. Feldman and S. Helfant	January 1969	45
E-2370	Reliability for the LSI Age	Jayne Partridge, L. David Hanley, and Arthur C. Metzger	December 1968	30
E-2377	LM Digital Autopilot Simulation Results Using Program Sundance	-	January 1969	150

E-2389	Star/Horizon Measurements for On-Board Spacecraft Navigation	James A. Hand	February 1969	30
E-2394	Manual Attitude Control of the Lunar Module	Robert F. Stengel	June 1969	20
E-2396	An Horizon Definition Experiment	Carlton R. Gray	June 1969	15
E-2397	Apollo Guidance and Control System Flight Experience	John E. Miller and Ain Laats	June 1969	15
E-2401	Application of Kalman Filtering Techniques to the Apollo Program	Richard H. Battin and Gerald M. Levine	April 1969	90
E-2404	Entry Flight Data from Apollo 7	Raymond Morth	April 1969	100
E-2405	Entry Flight Data from Apollo 8	Raymond Morth	April 1969	100

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
E-2406	General Questions on Kalman Filtering in Navigation Systems	George T. Schmidt and Larry D. Brock	April 1969	50
E-2409	Colossus 2: TVC DAP Simulation Results	Robert W. Schlundt	April 1969	105
E-2411	Apollo Navigation, Guidance, and Control Systems: A Progress Report	David G. Hoag	April 1969	35
E-2414	Guidance and Navigation Error Analysis for Mission F (Apollo 10)	F. D. Grant, J. Werner, and E. S. Muller	May 1969	210
E-2427	Mission G (AS 506/CM 107/LM 5) G&N Error Analysis	F. D. Grant, B. Kriegsman, E. S. Muller, J. Werner, and R. White	July 1969	250
E-2442	Guidance, Navigation, and Control Command Module Functional Description and Operation Using Flight Program Colossus 2C (Comanche 67)	-	August 1969	500
E-2450	The Minimum-Time Thrust-Vector Control Law in the Apollo Lunar-Module	William S. Widnall	December	

	Autopilot		1969	20
E-2451	Operations and Functions of the Apollo Guidance Computer During Rendezvous	Stephen L. Copps and Joseph A. Saponarro	November 1969	15
E-2454	Mission H1 (AS 507/CM 108/LM 6) G&N Error Analysis (Apollo 12)	F. D. Grant, S. B. Helfant, and B. A. Kriegsman	October 1969	105

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
E-2456	Apollo Guidance and Navigation Flow Charts: Program Colossus 2C (Comanche 67)	-	November 1969	2000

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E-2456	Apollo Guidance and Navigation Flow Charts, Rev. 1: Program Colossus 2D (Comanche 72)	-	December 1969	2000
E-2462	SIMFAM: Description and Operation	John F. McKenna, Jr.	March 1970	30
E-2463	Apollo Guidance Computer Improvement Study	Donald J. Bowler, et al.	January 1970	120
E-2464	Stored Program Data Processor Apollo Guidance Computer Study, Final Report	-	September 1969	70

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E-2468	Guidance and Navigation System Improvement Program (GNSIP), A Final Report	John Harper, ed.	December 1969	110
E-2469	Design and Development of Guidance, Navigation, and Control Software for the Apollo Application Program (AAP) "Wet-Workshop" Missions	-	April 1970	350
E-2470	Performance of a Doppler Velocity Sensor at High Speed Over Lunar Terrain	Walter E. Tanner	January 1970	30
E-2471	Apollo Guidance and Navigation Flow Charts: Program Luminary 1C	-	January 1970	2000

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
E-2471, vols. I and II	Apollo Guidance and Navigation Flow Charts, Rev. 2: Program Luminary 1D (rev. 173)	-	June 1970	2500

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E-2475	A Comprehensive Digital Simulation for the Verification of Apollo Flight Software	F. K. Glick and S. R. Femino	January 1970	30
E-2476	Man-Machine Design for the Apollo Navigation, Guidance, and Control System—Revisited: Apollo, a Transition in the Art of Piloting a Vehicle	J. L. Nevins	January 1970	40
E-2477	On-Board Management of Future Manned Spacecraft	Pierre Sarda	January 1970	20

E-2479	The Impact of LSI (Large-Scale Integration) on System Packaging	Jacob H. Martin	January 1970	15
E-2481	Alignment Optimization for Strapdown Systems	George J. Bukow	January 1970	25
E-2482	Entry Flight Data from Apollo 12	Paul Chin, Jr.	March 1970	110
E-2486	Fluid Effects in Floated Inertial Instruments	R. J. Cooper	January 1970	25
E-2491	Mission H2 (AS 508/CM 109/LM 7) G&N Error Analysis (Apollo 13)	F. D. Grant, S. B. Helfant, and B. A. Kriegsman	March 1970	110
E-2492	Demand-Actuated Multiplexing	J. H. Laning, Jr.	April 1970	10
E-2498	Lunar Terrain Elevation Measured by Apollo 10 Radar	Walter E. Tanner	April 1970	15

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
R-141	The M.I.T. 25 IRIG (Inertial Reference Integrating Gyro unit) and the M.I.T. 25 PIG (Pendulous Integrating Gyro unit)	Lester R. Grohe, Edward J. Hall, Michele S. Sapuppo, and Andrew E. Scoville	January 1958	240
R-276	Design Principles for a General Control Computer	R. Alonso and J. H. Laning, Jr.	April 1960	110
R-341	A Statistical Optimizing Navigation Procedure for Space Flight	Richard H. Battin	September 1961	40
R-341	A Statistical Optimizing Navigation Procedure for Space Flight, Revised	Richard H. Battin	May 1962	45
R-342	Development Criteria for Space Navigation Gyroscopes	C. Stark Draper, William G. Denhard, and Milton B.	October 1961	

		Trageser		35
R-348	Preliminary Specification for Procurement of Apollo Inertial Reference Integrating Gyro	E. J. Hall, J. Miller, and J. Aronson	December 1961	25
R-348	Specification for Procurement of Apollo Inertial Reference Integrating Gyro, Rev. A	E. J. Hall, J. Miller, J. Aronson, and A. Lattanzi	August 1962	35
R-349	Guidance and Navigation System Reliability Program	George W. Mayo	December 1961	40
R-349	Guidance and Navigation System Reliability Program, Rev. A	George W. Mayo	September 1962	45
R-349	Guidance and Navigation System Reliability Program, Rev. C	George W. Mayo	September 1964	90
R-349	Guidance and Navigation System Reliability Program, Rev. D	George W. Mayo	July 1965	95
R-353	Circumlunar Trajectory Calculations	R. Battin and J. Miller	April 1962	40
R-358	A Digital Control Computer Developmental Model 1B	R. L. Alonso, A. I. Green, H. E. Maurer, and R. E. Oleksiak	April 1962	175
R-359	Specification for Procurement of Inertial Reference Integrating Gyro Mark 45 Mod 2, Rev. A	Robert A. Booth	September 1962	35
R-367	A Multirange Precision Torque Measuring Device	P. J. Gilinson, Jr., C. R. Dauwalter, and J. A. Scoppettuolo	July 1962	80
R-368	Reliability Handbook for Electronic Designers	G. W. Mayo, Jr., and E. T. Driscoll	August 1962	50
R-372	Velocity Steering Studies for the Apollo Mission	James H. Flanders	August 1962	35
R-376	Two Impulse Abort Trajectories from Translunar Flight	Renwick E. Curry	October 1962	105

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R-380	Development of High Capacity Heat Storage Materials, Phase I —Study of Materials	Cryo-Therm, Inc.	July 1962	110
R-382	Universal Formulae for Conic Trajectory Calculations	Richard H. Battin	September 1962	15
R-383	Design Review Procedures	George W. Mayo, Jr.	September 1962	25
R-384	Requirements of and Index to Design Evaluation, Qualification, and Reliability Test Program for Apollo Guidance and Navigation System	George W. Mayo, Jr., and A. R. Schweitzer	March 1963	70
R-385	Inertial Orientation of the Moon	Richard C. Hutchinson	October 1962	50
R-387	Orbital Element Variations for a Body in Orbit Around the Moon	Stephen J. Madden, Jr.	July 1963	45
R-388	Preliminary Familiarization Manual	David Hoag and Milton B. Trageser	December 1962	105
R-389	Requirements of and Index to Design Evaluation, Qualification, and Reliability Test Program for Apollo Guidance and Navigation System	George W. Mayo, Jr., and A. R. Schweitzer	March 1963	65
R-389	Requirements of and Index to Design Evaluation, Qualification, and Reliability Test Program for Apollo Guidance and Navigation System, Revs. A, B, and C	George W. Mayo, Jr., and A. R. Schweitzer (and J. Kent)	July 1963, March 1964, and June 1965	40-85 each
R-391	The Effect of Retro-Rocket Exhaust on Visibility During Lunar Touchdown	G. Dudley Shepard	December 1962	45
R-393	Logical Description for the Apollo Guidance Computer (AGC4)	Albert Hopkins, Ramon Alonso, and Hugh Blair-Smith	March 1963	150
R-396	Apollo Guidance and Navigation Quality Assurance Plan	George W. Mayo, Jr., and	April 1963	

		Edward T. Driscoll		115
R-396	Apollo Guidance and Navigation Quality Assurance Plan, Rev. A	Edward T. Driscoll	June 1964	135

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R-399	Design and Checking of Indexing, Volume II—Gear Checking	Weyman S. Crocker and Ian G. McWilliams	April 1963	30
R-404	Radar Requirements for Primary Guidance and Navigation Operation	Apollo Staff	April 1963	50
R-405	Quarterly Reliability and Quality Assurance Status Report	Edward T. Driscoll	April 1963	20
R-408	Design Concepts of the Apollo Guidance Computer	Albert Hopkins	June 1963	40
R-411	Apollo Guidance and Navigation—A Problem in Man and Machine Integration	David G. Hoag	April 1963	20
R-412A	Navigation and Guidance Systems Employing a Gimballess IMU, Revised	Robert M. Bumstead and Wallace E. Vander Velde	October 1963	20
R-415	Apollo Reentry Guidance	D. J. Lickly, H. R. Morth, and B. S. Crawford	July 1963	20
R-416	The Apollo Guidance Computer	Ramon L. Alonso and Albert L. Hopkins	August 1963	30
R-417	A Unified Explicit Technique Performing Orbital Insertion, Soft Landing, and Rendezvous with a Throttleable Rocket-Propelled Space Vehicle	George W. Cherry	August 1963	25
R-417	A Class of Unified Explicit Methods for Steering Throttleable and Fixed-Thrust Rockets, Revised	George W. Cherry	January 1964	45
R-429	Reliability and Quality Assurance Progress Report	Edward T. Driscoll	December	

			1963	80
R-434	Preliminary Guidance and Navigation Test Plan	Apollo Staff	December 1963	150
R-439	Failure, Trouble, and Corrective Action Summary Design Phase, Report #1	George Kruszewski	February 1964	25
R-440	Quarterly Reliability and Quality Assurance Progress Report, Apollo Guidance and Navigation Program, Period Ended December 31, 1963	Edward T. Driscoll	January 1964	40
R-443	Reprints of Presentation to Northeast Executive's Visit at Instrumentation Laboratory	-	March 1964	150
R-445	Technical Development Status of Apollo Guidance and Navigation	Norman E. Sears	April 1964	35
R-446, vols. I and II	Primary G&N System Lunar Orbit Operations	Norman E. Sears, ed.	April 1964	510

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R-447	Navigation for the Apollo Program	J. M. Dahlen and J. L. Nevins	May 1964	45
R-451	Quarterly Reliability and Quality Assurance Progress Report Apollo Guidance and Navigation Program	Edward T. Driscoll, ed.	July 1964	65
R-456	E Guidance—A General Explicit, Optimizing Guidance Law for Rocket-Propelled Spacecraft	George W. Cherry	August 1964	70
R-457	Quarterly Reliability and Quality Assurance Progress Report, Period Ended 30 June 1964	-	September 1964	95
R-462	Dissimilar Metals; Compilation of Contacting Interfaces Between G&N Parts, G&N Airborne Equipments (Block I)	E. T. Ogrodnik	September 1964	45

R-464	Reliability and Quality Assurance Progress Report	-	July 1964	30
R-466	Vibration Effects on Apollo Guidance	F. D. Grant	October 1964	25
R-467	The Compleat Sunrise: Being a Description of Program Sunrise (Sunrise 33—NASA DWG #1021102)	R. Battin, R. Crisp, A. Green, T. J. Lawton, C. A. Muntz, J. Rocchio, and E. Smally	September 1964	135
R-472	Analytical Techniques for the Estimation of Satellite Position and Velocity	Mark A. Smith	July 1964	50
R-475	Monthly Reliability and Quality Assurance Progress Report	-	August 1964	25
R-476	Reliability and Quality Assurance Progress Report	-	September 1964	25
R-479	A Unified Method of Generating Conic Sections	William Marscher	February 1965	15
R-482	A Method of Orbital Navigation Using Optical Sightings to Unknown Landmarks	Gerald M. Levine	March 1965	20
R-489	Users Guide to the Block II AGC/LGC Interpreter	Charles A. Muntz	April 1965	70
R-491	On Optimal Steering to Achieve "Required Velocity"	Balraj G. Sokkappa	April 1965	20
R-493	Quarterly Reliability and Quality Assurance Progress Report (11/1/64-4/30/65)	G. W. Mayo, Jr.	June 1965	45
R-494	Apollo Guidance and Navigation Test Data Program Plan	Nelson Hanover and Joseph D. Fleming, Jr.	July 1965	120
R-495	Apollo Spacecraft Guidance System (for presentation to the IFAC Symposium, 1965)	Milton B. Trageser and David G. Hoag	June 1965	80
R-496	Design Review Procedures	George W. Mayo, Jr.	May 1965	20

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R-498	The 'Braid' Transformer Memory	R. L. Alonso and W. H. Aldrich	September 1965	60
R-499	Design Principles of the Lunar Excursion Module Digital Autopilot	George Cherry and Joseph O'Connor	July 1965	85
R-500, Vols. 1 and 2	Space Navigation and Control	-	June 1965	300
R-503	A Block II Digital Lead-Lag Compensation for the Pitch-Yaw Autopilot of the Command and Service Module	Gilbert Stubbs	October 1965	50
R-507, Vol. 1	G&N System Operations Plan, Mission AS-204A/205, Rev. 1	-	October 1966	1000?
R-518	Final Report LEM Truck Guidance and Navigation Study	-	September 1965	190
R-520	Quarterly Reliability and Quality Assurance Progress Report, 5/1/65-7/31/65	-	September 1965	40
R-524	Quarterly Reliability and Quality Assurance Progress Report, 8/1/65-10/31/65	-	December 1965	50
R-525	Hybrid Simulation of the Apollo Guidance and Navigation System	Madeline M. Sullivan	December 1965	35

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R-527, vol. 1	Guidance System Operations Plan, AS-206	-	January 1967	200
R-527, vols. 1 and 2	Guidance System Operations Plan LM-1 Using Burst 116 Program, Rev. 2	-	July 1967	350

R-529	Apollo Mission Simulations Utilizing Flight Software and Hardware	Malcolm W. Johnston	July 1968	80
R-531	Whole Number Strapdown Computations	J. C. Pennypacker	February 1966	95
R-532, vols. I and II	Reentry Guidance for Apollo	Raymond Morth	January 1966	150
R-533	A Block II TVC Digital Autopilot Compensation for CSM Spacecraft	Tan C. Lu (NAA/S&ID)	January 1966	50
R-537, vol. I	Guidance System Operations Plan, AS-501	-	December 1966	200
R-539	A Manually Retargeted Automatic Descent and Landing System for LEM	Allan R. Klumpp	March 1966	45
R-539	A Manually Retargeted Automatic Landing System for LM, Rev. 1	Allan R. Klumpp	August 1967	50
R-541	The Power Density Spectrum of the Echo from an Airborne Doppler Radar	Martin Schetzen	March 1966	55

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R-547, vol. I	Guidance System Operations Plan, AS-278: CM GNCS Operations	-	October 1966	800
R-547, vol. II	Guidance System Operations Plan, AS-278: LM PGNCS Operations	-	October 1966	650
R-547, section 2	Guidance System Operations Plan for Manned CM Earth Orbital Missions Using Program Sundisk: Data Links, Rev. 2	-	October 1968	150
R-547, section 3	Guidance System Operations Plan for Manned CM Earth Orbital Missions Using Program Sundisk: CSM Digital Autopilots, Revs. 2 and 3	-	May 1968 and October 1968	130

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R-557, section 1	Guidance System Operations Plan for Manned LM Earth Orbital Missions Using Programs Sundance, Luminary: Pre-Launch	-	June 1968	50
R-557, section 1	Guidance System Operations Plan for Manned LM Earth Orbital Missions Using Programs Sundance 306 and Luminary 069: Pre-Launch, Rev. 1	-	December 1968	50
R-557, section 2	Guidance System Operations Plan for Manned LM Earth Orbital Missions Using Program Sundance: Data Links	-	December 1967	40
R-557, section 2	Guidance System Operations Plan for Manned LM Earth Orbital Missions Using Program Sundance: Data Links, Rev. 1	-	May 1968	45
R-557, section 2	Guidance System Operations Plan for Manned LM Earth Orbital Missions Using Program Sundance: Data Links, Rev. 2	-	September 1968	100
R-557, section 2	Guidance System Operations Plan for Manned LM Earth Orbital Missions Using Program Sundance (Rev. 306): Data Links, Rev. 3	-	January 1969	100
R-557, section 3	Guidance System Operations Plan for Manned LM Earth Orbital Missions Using Program Sundance: Digital Autopilot	-	June 1968	100
R-557, section 4	Guidance System Operations Plan for Manned LM Earth Orbital Missions Using Program Sundance: PGNCS Operational Modes	-	December 1967	1200

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R-557, section 4	Guidance System Operations Plan for Manned LM Earth Orbital Missions Using Program Sundance: PGNCS Operational Modes, Rev. 1	-	February 1968	20
R-557, section 4	Guidance System Operations Plan for Manned LM Earth Orbital Missions Using Program Sundance: Operational Modes, Rev. 2	-	July 1968	530

R-557, section 4	Guidance System Operations Plan for Manned LM Earth Orbital Missions Using Program Sundance: PGNCs Operational Modes, Rev. 3	-	January 1969	260
R-557, section 5	Guidance System Operations Plan for Manned LM Earth Orbital Missions Using Program Sundance: Guidance Equations	-	November 1967	200
R-557, section 5	Guidance System Operations Plan for Manned LM Earth Orbital Missions Using Program Sundance: Guidance Equations, Rev. 1	-	June 1968	350
R-557, section 5	Guidance System Operations Plan for Manned LM Earth Orbital Missions Using Program Sundance: Guidance Equations, Rev. 2	-	December 1968	70
R-557, section 6	Guidance System Operations Plan for Manned LM Earth Orbital Missions Using Program Sundance: Control Data	-	December 1967	35
R-557, section 6	Guidance System Operations Plan for Manned LM Earth Orbital Missions Using Program Sundance: Control Data, Rev. 1	-	August 1968	60
R-557, section 6	Guidance System Operations Plan for Manned LM Earth Orbital Missions Using Program Sundance: Control Data, Rev. 2	-	November 1968	2

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R-567, section 2	Guidance System Operations Plan for Manned LM Earth Orbital and Lunar Missions Using Program Luminary: Data Links	-	October 1968	70
R-567, section 2	Guidance System Operations Plan for Manned LM Earth Orbital and Lunar Missions Using Program Luminary: Data Links, Rev. 1	-	December 1968	75
R-567, section 2	Guidance System Operations Plan for Manned LM Earth Orbital and Lunar Missions Using Program Luminary: Data Links, Rev. 2	-	March 1969	125
R-567, section 2	Guidance System Operations Plan for Manned LM Earth Orbital and Lunar Missions Using Program Luminary 1A (Rev. 099): Data Links, Rev. 4	-	June 1969	125

R-567, section 2	Guidance System Operations Plan for Manned LM Earth Orbital and Lunar Missions Using Program Luminary 1B (Rev. 116): Data Links, Rev. 5	-	August 1969	120
R-567, section 2	Guidance System Operations Plan for Manned LM Earth Orbital and Lunar Missions Using Program Luminary 1B (Rev. 116): Data Links, Rev. 6	-	October 1969	50
R-567, section 2	Guidance System Operations Plan for Manned LM Earth Orbital and Lunar Missions Using Program Luminary 1C (Rev. 130): Data Links, Rev. 7	-	November 1969	125
R-567, section 2	Guidance System Operations Plan for Manned LM Earth Orbital and Lunar Missions Using Program Luminary 1C (Rev. 131): Data Links, Rev. 8	-	March 1970	100
R-567, section 3	Guidance System Operations Plan for Manned LM Earth Orbital and Lunar Missions Using Program Luminary: Digital Autopilot	-	December 1968	100
R-567, section 3	Guidance System Operations Plan for Manned LM Earth Orbital and Lunar Missions Using Program Luminary: Digital Autopilot, Rev. 1	-	June 1969	120
R-567, section 3	Guidance System Operations Plan for Manned LM Earth Orbital and Lunar Missions Using Program Luminary: Digital Autopilot, Rev. 3	-	October 1969	140
R-567, sections 2, 4, 5	Guidance System Operations Plan for Manned LM Earth Orbital and Lunar Missions Using Program Luminary 1D, Rev. 8	-	January 1970	60
R-567, sections 2, 3, 4, 5	Guidance System Operations Plan for Manned LM Earth Orbital and Lunar Missions Using Program Luminary 1D, Rev. 8 (Rev. 4 for section 3)	-	February 1970	60

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
R-567, section 4	Guidance System Operations Plan for Manned LM Earth Orbital and Lunar Missions Using Program Luminary: PGNCs Operational Modes	-	March 1968	1200
R-567, section 4	Guidance System Operations Plan for Manned LM Earth Orbital and Lunar Missions Using Program Luminary 1 (Rev. 069): PGNCs Operational Modes, Rev. 1	-	January 1969	1200
R-567,	Guidance System Operations Plan for Manned LM Earth Orbital and Lunar Missions Using	-	February	

section 4	Program Luminary 1A: PGNCS Operational Modes, Rev. 2 (Supplement to Luminary 1 Rev. 069)		1969	70
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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
R-567, section 4	Guidance System Operations Plan for Manned LM Earth Orbital and Lunar Missions Using Program Luminary 1A (Rev. 097): PGNCS Operational Modes, Rev. 3	-	April 1969	200
R-567, section 4	Guidance System Operations Plan for Manned LM Earth Orbital and Lunar Missions Using Program Luminary 1A (Rev. 099): PGNCS Operational Modes, Rev. 4	-	June 1969	500
R-567, section 4	Guidance System Operations Plan for Manned LM Earth Orbital and Lunar Missions Using Program Luminary 1B: PGNCS Operational Modes, Rev. 5	-	August 1969	1500
R-567, section 4	Guidance System Operations Plan for Manned LM Earth Orbital and Lunar Missions Using Program Luminary 1B (Rev. 116): PGNCS Operational Modes, Rev. 6	-	September 1969	100

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
R-567, section 4	Guidance System Operations Plan for Manned LM Earth Orbital and Lunar Missions Using Program Luminary 1C (Rev. 131): PGNCS Operational Modes, Rev. 7	-	December 1969	1450
R-567, section 5	Guidance System Operations Plan for Manned LM Lunar Missions Using Program Luminary: Guidance Equations	-	January 1967	400
R-567, section 5	Guidance System Operations Plan for Manned LM Earth Orbital and Lunar Missions Using Program Luminary: Guidance Equations, Rev. 1	-	November 1968	400

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
R-567, section 5	Guidance System Operations Plan for Manned LM Earth Orbital and Lunar Missions Using Program Luminary (Rev. 069): Guidance Equations, Rev. 2	-	April 1969	700
R-567, section 5	Guidance System Operations Plan for Manned LM Earth Orbital and Lunar Missions Using Program Luminary 1A (Rev. 099): Guidance Equations, Rev. 4	-	June 1969	400
R-567, section 5	Guidance System Operations Plan for Manned LM Earth Orbital and Lunar Missions Using Program Luminary 1B: Guidance Equations, Rev. 5	-	August 1969	500
R-567, section 5	Guidance System Operations Plan for Manned LM Earth Orbital and Lunar Missions Using Program Luminary 1B (Rev. 116): Guidance Equations, Rev. 6	-	October 1969	20

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>
R-567, section 5	Guidance System Operations Plan for Manned LM Earth Orbital and Lunar Missions Using Program Luminary 1C (Rev. 130): Guidance Equations, Rev. 7	-	November 1969
R-567, section 6	Guidance System Operations Plan for Manned LM Earth Orbital and Lunar Missions Using Program Luminary: Control Data	-	November 1968
R-568	Gyro Reliability—Achieved Through Proper Design and Effective Performance Monitoring	Edward J. Hall	March 1967
R-577, section 1	Guidance System Operations Plan for Manned Earth Orbital or Lunar Missions Using Program Colossus: Prelaunch	-	July 1968
R-577, section 1	Guidance System Operations Plan for Manned Earth Orbital or Lunar Missions Using Program Colossus 1 (Rev. 237): Prelaunch, Rev. 1	-	October 1968

R-577, section 1	Guidance System Operations Plan for Manned Earth Orbital or Lunar Missions Using Program Colossus 2 (Comanche Rev. 44 & 45) or Colossus 2A (Comanche Rev. 51): Prelaunch, Rev. 1	-	October 1968, reissu
R-577, section 1	Guidance System Operations Plan for Manned Earth Orbital or Lunar Missions Using Program Colossus 2E: Prelaunch, Rev. 2	-	January 1970
R-577, section 2	Guidance System Operations Plan for Manned Earth Orbital or Lunar Missions Using Program Colossus: Data Links, Rev. 1	-	June 1968
R-577, section 2	Guidance System Operations Plan for Manned Earth Orbital or Lunar Missions Using Program Colossus 1 (Rev. 237): Data Links, Rev. 2	-	November 1968
R-577, section 2	Guidance System Operations Plan for Manned Earth Orbital or Lunar Missions Using Program Colossus 2 (Comanche Rev. 44, 45): Data Links, Rev. 2	-	March 1969
R-577, section 2	Guidance System Operations Plan for Manned Earth Orbital or Lunar Missions Using Program Colossus 2 (MANCHE45, rev. 2): Data Links, Rev. 1	-	June 1969

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
R-577, section 2	Guidance System Operations Plan for Manned Earth Orbital or Lunar Missions Using Program Colossus 2C (Comanche Rev. 67): Data Links, Rev. 6	-	July 1969	125
R-577, section 2	Guidance System Operations Plan for Manned Earth Orbital or Lunar Missions Using Program Colossus 2C (Comanche Rev. 67): Data Links, Rev. 7	-	September 1969	125
R-577, section 2	Guidance System Operations Plan for Manned Earth Orbital or Lunar Missions Using Program Colossus 2D (Comanche Rev. 72): Data Links, Rev. 8	-	November 1969	125
R-577, section 2	Guidance System Operations Plan for Manned Earth Orbital or Lunar Missions Using Program Colossus 2D (MANCHE72 Rev. 3): Data Links, Rev. 9	-	December 1969	20
R-577, section 2	Guidance System Operations Plan for Manned Earth Orbital or Lunar Missions Using Program Colossus 2E: Data Links, Rev. 10	-	March 1970	125

R-577, section 3	Guidance System Operations Plan for Manned Earth Orbital and Lunar Missions Using Program Colossus: Digital Autopilots	-	April 1968	150
R-577, section 3	Guidance System Operations Plan for Manned Earth Orbital and Lunar Missions Using Program Colossus: Digital Autopilots, Rev. 1	-	June 1968	200
R-577, section 3	Guidance System Operations Plan for Manned Earth Orbital and Lunar Missions Using Program Colossus 1 (Rev. 237): Digital Autopilots, Rev. 2	-	November 1968	200
R-577, section 3	Guidance System Operations Plan for Manned Earth Orbital and Lunar Missions Using Program Colossus 2 (Comanche Rev. 44): Digital Autopilots, Rev. 4	-	February 1969	200
R-577, section 3	Guidance System Operations Plan for Manned Earth Orbital and Lunar Missions Using Program Colossus 2 (MANCHE45) and 2A (Comanche Rev. 55): Digital Autopilots, Revs. 5 and 6	-	April 1969	50
R-577, section 3	Guidance System Operations Plan for Manned Earth Orbital and Lunar Missions Using Program Colossus 2C (Comanche Rev. 67): Digital Autopilots, Rev. 7	-	August 1969	200
R-577, section 3	Guidance System Operations Plan for Manned Earth Orbital and Lunar Missions Using Program Colossus 2D: Digital Autopilots, Rev. 8	-	October 1969	10

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
R-577, section 3	Guidance System Operations Plan for Manned Earth Orbital and Lunar Missions Using Program Colossus 2E: Digital Autopilots, Rev. 10	-	February 1970	300
R-577, section 4	Guidance System Operations Plan for Manned Earth Orbital and Lunar Missions Using Program Colossus: GNCS Operational Modes, Rev. 1	-	April 1968	800
R-577, section 4	Guidance System Operations Plan for Manned Earth Orbital and Lunar Missions Using Program Colossus 1 (Rev. 237): GNCS Operational Modes, Rev. 5	-	December 1968	1000

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
R-577, section 4	Guidance System Operations Plan for Manned Earth Orbital and Lunar Missions Using Program Colossus 2 (Comanche Rev. 44, 45): GNCS Operational Modes, Rev. 7	-	March 1969	1200
R-577, section 4	Guidance System Operations Plan for Manned Earth Orbital and Lunar Missions Using Program Colossus 2 (MANCHE45, Rev. 2): GNCS Operational Modes, Rev. 8	-	June 1969	1200

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R-577, section 4	Guidance System Operations Plan for Manned Earth Orbital and Lunar Missions Using Program Colossus 2A (Comanche 55): GNCS Operational Modes, Rev. 9	-	June 1969	1400
R-577, section 4	Guidance System Operations Plan for Manned Earth Orbital and Lunar Missions Using Program Colossus 2C (Comanche 67): GNCS Operational Modes, Rev. 10	-	August 1969	1400

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R-577, section 4	Guidance System Operations Plan for Manned Earth Orbital and Lunar Missions Using Program Colossus 2D (Comanche 72): Operational Modes, Rev. 11	-	December 1969	1400
R-577, section 4	Guidance System Operations Plan for Manned Earth Orbital and Lunar Missions Using Program Colossus 2E: Operational Modes, Rev. 12	-	March 1970	200
R-577, section	Guidance System Operations Plan for Manned Earth Orbital and Lunar Missions Using	-	December	

5	Program Colossus: Guidance Equations		1967	500
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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
R-577, section 5	Guidance System Operations Plan for Manned Earth Orbital and Lunar Missions Using Program Colossus: Guidance Equations, Rev. 1	-	May 1968	400
R-577, section 5	Guidance System Operations Plan for Manned Earth Orbital and Lunar Missions Using Program Colossus: Guidance Equations, Rev. 2	-	July 1968	150
R-577, section 5	Guidance System Operations Plan for Manned Earth Orbital and Lunar Missions Using Program Colossus 1 (Rev. 237): Guidance Equations, Rev. 3	-	November 1968	400
R-577, section 5	Guidance System Operations Plan for Manned Earth Orbital and Lunar Missions Using Program Colossus 2 (Comanche Rev. 44, 45): Guidance Equations, Rev. 5	-	March 1969	400
R-577, section 5	Guidance System Operations Plan for Manned Earth Orbital and Lunar Missions Using Program Colossus 2 (MANCHE45 rev. 2) and 2A (Comanche, rev. 55): Guidance Equations, Revs. 6 and 7	-	April 1969	30

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
R-577, section 5	Guidance System Operations Plan for Manned Earth Orbital and Lunar Missions Using Program Colossus 2C (Comanche 67): Guidance Equations, Rev. 8	-	July 1969	400
R-577, section 5	Guidance System Operations Plan for Manned Earth Orbital and Lunar Missions Using Program Colossus 2D (Comanche 72): Guidance Equations, Rev. 9	-	November 1969	400
R-577, section 5	Guidance System Operations Plan for Manned Earth Orbital and Lunar Missions Using Program Colossus 2E: Guidance Equations, Rev. 10	-	March 1970	400

R-577, section 6	Guidance System Operations Plan for Manned Earth Orbital and Lunar Missions Using Program Colossus: Control Data	-	June 1968	80
R-577, section 6	Guidance System Operations Plan for Manned Earth Orbital and Lunar Missions Using Program Colossus 1 (Rev. 237): Control Data, Rev. 1	-	December 1968	25
R-577, all sections	Guidance System Operations Plan for Manned Earth Orbital and Lunar Missions Using Program Colossus 1 (Rev. 237) and 1A (Rev. 249): Control Data, Rev. 1 (sections 1&6), Rev. 2 (section 2), Rev. 3 (section 3), Rev. 4 (section 5), Rev. 6 (section 4)	-	December 1968	200

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
R-596, vol. 4	AS-205 Verification Results Program Sundisk: Digital Autopilot Test Results	-	February 1968	335
R-597	Fluctuation Errors of Doppler Sensors at Low Velocities	Walter Tanner	May 1970	40
R-599	Digital Simulation Manual	Pieter Mimno	January 1968	100
R-618	A New Solution for Lambert's Problem	Richard H. Battin	August 1968	15
R-634	Apollo Applications Program Final Report on Tasks 1 Through 8	M. Edward Womble, James Deckert, and Alexander Penchuck	February 1969	400
R-648	MIT/IL X-15 Horizon Definition Experiment, Final Report	Carlton R. Gray	October 1969	250
R-656	On the Formal Description of Polarization Optics	Cynthia K. Whitney	May 1970	90

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
R-659	A Fault-Tolerant Information Processing System for Advanced Control, Guidance, and Navigation	-	May 1970	160
R-670	A Digital Autopilot for Thrust Vector Control of the Apollo CSM and CSM/LM Vehicles	G. Stubbs, A. Penchuk, and R. Schlundt	November 1969	70

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
T-297	Star Occultation Measurements as an Aid to Navigation in CIS-Lunar Space	Roy Vincent Keenan and John Donald Regenhardt	May 1962	85
T-298	Optimum Statistical Operations with Celestial Fix Data for Interplanetary Navigation	D. R. Scott, C. J. Januska, and R. E. Willes	May 1962	185
T-299	Optimization of Interplanetary Mid-Course Velocity Corrections	Mack Mauldin, Jr., and Robert G. Millard	May 1962	60
T-300	Theoretical Analysis of Gimballess Inertial Reference Equipment Using Delta-Modulated Instruments	Thomas Freud Wiener	March 1962	165
T-327	An Improved Technique for Measuring the True RMS Stability of a Sinusoidal Waveform	Glenn Francis Cushman	October 1962	100
T-344	The Effects of Lubrication Oil Deposition on Optical Systems in Vacua	William A. Vachon	June 1963	40
T-385	Human Performance During a Simulated Apollo Mid-Course Navigation Sighting	Charles M. Duke, Jr., and Michael S. Jones	June 1964	50
T-401	A Star Tracker Scanning Mechanism	Wayne Michael Gifford	June 1965	55
T-418	Establishing Initial Attitude Conditions in a Gimballess Inertial Navigation System	John Edward Bortz	June 1965	100

T-442	A Pulse Restrained Magnetic Suspension	Michael D. Leis	January, 1966	95
T-446	On the Design of Nearly Optimal Linear Time-Varying Sampled-Data Stochastic Controllers	William S. Widnall	September 1966	210
T-462	A Method of Determining a Satellite's Position and Velocity by Tracking Unknown Landmarks	Cannon Matthews	June 1966	60

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<i>Designation</i>	<i>Title</i>	<i>Author(s)</i>	<i>Date</i>	<i>Page Count</i>
RE-17	Optimization of Midcourse Velocity Corrections	Robert G. Stern and James E. Potter	November 1965	15
-	Reprints of Technical Presentations, Critical Design Review	-	December 1965	450
MC-1500	Assembly and Test Manual 16 Pulsed Integrating Pendulum (16 PIP), Mod D	-	April 1963	186
T-421	System Test Determination of Apollo IRIG Drift Coefficients	George Thomas Schmidt	June 1965	75
-	(Apparent PIP graphical data for presentations)	-	April 1963/May 1964	10
PS6015000	Performance/Design and Product Configuration Requirements: Primary Guidance, Navigation, and Control System for Lunar Excursion Module, Rev. A	-	October 1965	60
PS2015000	Performance/Design and Product Configuration Requirements: Airborne Guidance and Navigation Equipment—Block II for Apollo Command Module	-	November 1965	66

[1](#) Yes, revision 2 precedes revision 1—RSB

[2](#) Yes, it really says “MANCHE45”—RSB